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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------------|-------------|----------------------|------------------------|------------------|
| 10/056,634 | 01/23/2002 | Sayed A. Mir | DP-301063 / DE3-0124-D | 1017 |
| 23413 | 7590 | 01/24/2005 | EXAMINER | |
| CANTOR COLBURN, LLP | | | TERESINSKI, JOHN | |
| 55 GRIFFIN ROAD SOUTH | | | ART UNIT | |
| BLOOMFIELD, CT 06002 | | | PAPER NUMBER | |

2858

DATE MAILED: 01/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/056,634 | MIR ET AL. | |
| | Examiner | Art Unit | |
| | John Teresinski | 2858 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/26/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,6-10,12,14-19,21,23-27,29 and 31-33 is/are rejected.
- 7) ☒ Claim(s) 3,5,11,13,20, 22, 28 and 30 is/are objected to.
- 8) ☒ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>10/26/2004</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 4, 6-10, 12, 14-19, 21, 23-27, 29 and 31-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,361,210 Fu in view of U.S. Patent No. 5,726,545 to Iwashita et al..

Regarding claims 1, 9, 18 and 26, Fu discloses detecting a rotational position of an electric machine with a position encoder coupled to the electric machine (column 3 lines 31-34), controlling an inverter comprising a plurality of switching devices (column 4 lines 26-28), the inverter (10) having an input coupled to a direct current bus, and an output coupled to a polyphase bus, the inverter responsive to commands from a controller coupled to the inverter and the position encoder (Fig. 1, element 1) and measuring a current from the direct current bus (column 4 lines 39-54). Fu does not disclose capturing the current at a predefined interval of time. Iwashita et al. disclose a current control method for a motor including detecting a rotational position of an electric machine with a position encoder (25) coupled to the electric machine (column 7 lines 12-23, Fig. 8), an inverter (23) and capturing the current at a predefined interval of time (column 5 lines 35-37). It would have been obvious to one of ordinary skill in the art at the time the invention was made to include capturing the current at a predefined

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interval of time as taught by Iwashita et al. into Fu for the purpose of correcting current measurements to provide accurate control of an electric machine such as a motor.

Regarding claims 2, 10, 19 and 27, Fu disclose determining a set of values representative of a magnitude of currents on each phase of the polyphase buss (column 4 lines 39-54).

Regarding claims 4, 12, 21 and 29, Fu discloses determining a value representative of a torque current from the current (column 2 lines 65-69).

Regarding claims 6,7,14,15,23, 24, 31 and 32, Fu discloses an encoder for position sensing (column 3 lines 31-34) and a permanent magnet motor/DC brushless motor/direct drive motor (column 3 lines 10-14).

Regarding claims 8, 17, 25 and 33, Fu disclose capturing is characterized by sampling a signal value representative of the current (column 4 lines 39-41).

Regarding claim 16, Fu discloses the inverter comprised of switching devices coupled to and responsive to the controller (column 4 lines 26-28).

Allowable Subject Matter

Claims 3, 5, 11, 13, 20, 22, 28 and 30 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance:

Regarding claims 3, 5, 11, 13, 20, 22, 28 and 30:

The primary reason for the allowance of claims 3, 5, 11, 13, 20, 22, 28 and 30 is the inclusion of a predefined combination of the switching devices are active and an angle between a

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phase voltage and a corresponding phase current on each phase of the polyphase bus being within a range of about minus thirty to about thirty degrees. It is these features found in the claim, as they are claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Teresinski whose telephone number is (571) 272-2235. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lefkowitz can be reached on (571) 272-2180. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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November 4, 2004



N. Le
Supervisory Patent Examiner
Technology Center 2800